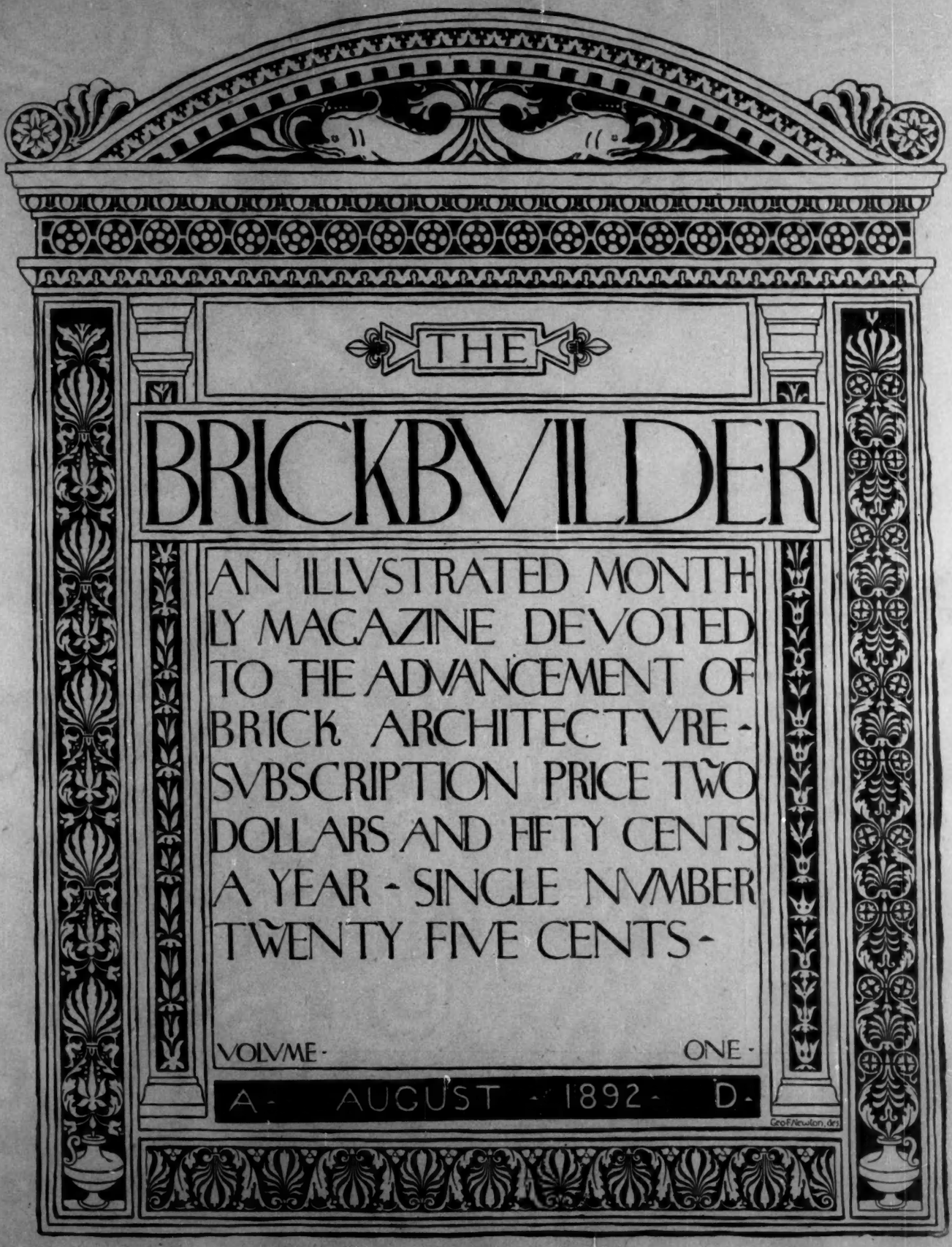

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The Brickbuilder.

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THE BRICKBUILDER.

AN ILLUSTRATED MONTHLY DEVOTED TO THE ADVANCEMENT OF BRICK ARCHITECTURE

PUBLISHED BY

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As is so often remarked, "there are bricks and bricks," so it may be said of their makers. *The British Clayworker* recently related an instance that has probably had so many counterparts in this country, that publishers working in the interests of brickmaking have come to regard them as one of the necessary characteristics of the trade. A representative of *The British Clayworker*, introducing that paper to the English brickmakers, met one worthy, doubtless one of those "practical" men who still cling to the methods of their forefathers, who informed him that he couldn't "learn him nothing about brickmaking." The strange thing is that the representative of the *Clayworker* should not have found individuals of this class the rule rather than the exception; for in all parts of Europe precedence prevails so largely in every trade that any innovation, even though it be manifestly an improvement, has a hard fight against tradition before it can establish itself. In this country we have a large number of brickmakers who "can't be learned nothing." But, happily, we have another class who believe in thoroughly investigating every improvement that science or inventive genius offers. To this class of progressive men we owe almost all the modern methods of handling clay in its progress from the bank to the building, and we find them immediately interested in what promises to advance their trade. They are the really practical men — the men who believe that practical brickmaking means making the largest number of good bricks at the least expense of time and labor, and with the minimum percentage of loss. Their business is done in a *factory* rather than in a *yard*.

There remains the class of brickmakers whom it is almost a hopeless task to educate, who must work on in the "completeness of their knowledge" (?) until they join the great majority, or their more progressive competitors supplant them in the market. When the business is handed down from father to son there is some likelihood of innovation, for the American born son has not so great a regard for tradition, that he lets it stand in his way toward the success he sees others reaching. We may, therefore, expect a constant development in the art of brickmaking which, if accompanied by improvement in the art of bricklaying, will give us a brick architecture surpassing the work we now turn to for instruction and inspiration.

If tradition is a hindrance in the art of the brickmaker, it is as surely a help in the art of the bricklayer. The former is a mechanical art depending for its success upon the perfection of mechanical devices. The latter is an art which depends upon the individual, in whose trained hand and eye lies the success of his work. That this skill depends largely upon traditions handed down through generations is proven in the history of every art the world has known. It has remained for modern trade unionism to assert that no man shall rise in his trade, to discourage every incentive to advancement, to hold the capable workman down to the level of the incapable, without an effort to bring the incapable up to a higher standard. In the face of this condition of affairs, is it any wonder that architects dare not attempt the brickwork that they know depends for success upon an appreciative workman? They must, therefore, confine their brickwork to plain surfaces unless they know their builders well.

The beautiful belt courses and cornices, dependent upon intelligent brick cutting and laying, which are found in such numbers in the brick countries of Europe, must give place to mechanically cut and stamped sheet metal, or to expensive terra-cotta, until men are allowed to cut and lay bricks in the method of the artist, and not the machine. As it is now, a brick of unusual color or texture is limited in decorative use to the simplest forms of bricklaying. The large manufacturers make ornamental bricks to correspond with their different shades of pressed brick, but who makes a moulded brick to go with common bricks? Only the other day we received an inquiry from an architect, for the name of some maker who supplied ornamental bricks to correspond with common bricks. We knew of none, and we doubt whether such bricks would find a large enough market to pay for making them, for they would have to combine accuracy of form with roughness and variety of texture. But the architect who can get his designs executed, will find that the most rtistic work is within reach of his common bricks. As an instance we would refer to the building for the Ludlow Mfg. Co., an elevation of which, with details, was published in the January number. This building, which is of the simplest design, is crowned with one of the most successful cornices in Boston, and yet this cornice depends wholly for its effect upon the clever cutting and laying of common bricks.

The use of bricks in enclosing walls, or fences, and entrances, offers a large field for effective work that has been to a great extent neglected in this country, and it is something that we are at a loss to account for. Over-burned bricks, culls, and "bats," not salable in the ordinary market, can be used to good advantage and with artistic effect in walls which we would like to see replace the hideous picket fences that disfigure our smaller cities and towns all over the country. This disfigurement has led to the entire abolishment in many places of fences of all sorts, resulting from a combined movement among public-spirited citizens. But there are instances, and they are in the majority, when we think a boundary wall or fence a necessity, often as much for appearances as to serve as a barrier. The readiness with which brick lends itself to this class of construction is proven by numerous successful examples here, and many more abroad; and when it comes to building entrance gates, who shall say that the entrance to Harvard University should have been else than brick? At a rough estimate there are 20,000 and upwards of property owners in this country interested in brickmaking. How many have their property enclosed with a brick wall? The writer remembers calling at the residence of a brickmaker in Trenton, N. J., a substantial brick house located on a corner, the lot

surrounded with a hideous iron fence, the choice stock pattern of some "architectural iron works." Within the yard grew a variety of flowering shrubs and climbing vines that evidenced a very good and marked taste in this direction on the part of the proprietor. By using culls from his yard, and being at no expense except for labor, in place of his expensive iron fence, he might have had a low wall over which some of his climbing vines could have run, and thoroughly establishing themselves, made a thing of beauty out of what, in that location, was a necessity.

Looking towards a wider use for bricks, would it not be a step in the right direction for those most interested, *i. e.*, the brickmakers, to set an example in the use of brick in walls, that would be followed by many other property owners? It would not be difficult to induce mason builders and contractors to follow the brickmakers' lead, and if necessary it would be a paying investment for the manufacturer to furnish, free of cost, the bricks necessary in these cases. Possibly the most necessary step towards such work is the providing of suitable ideas, and to this end THE BRICKBUILDER will institute a competition in the near future, which, if as successful as our cornice and mantel competitions, will provide no lack of ideas for brickmakers to begin the campaign with.

The competitions we have been conducting have, in some respects, been exceedingly satisfactory, both in point of number of competitors and quality of the work; but there have been certain shortcomings arising mainly from not wholly understanding the essentials of the problem, and these we believe can be done away with to a large extent, by publishing previous to the competitions critical articles, prepared by able writers, clearly explaining the functions of the architectural motives chosen for the competition. These articles, illustrated by the best models to study, will give all competitors a straight start and save them from many of the errors that now make their work imperfect. They will, however, be prepared with a first view to their general value and usefulness to the majority of our readers, and their bearing on the competitions will be secondary. But as we have for some time had in view articles of this nature, it will be easily arranged to have them correspond, in subject and time, to certain competitions.

Designers using ornamental bricks are often very prone to forget the nature of the material they are working with. Their designs might as well be executed in stone, indeed, in most cases stone would be better, for they ignore the joint entirely. Then, too, mouldings in brickwork can never be made to have the regularity of well cut stone, yet for their effect these designs depend upon precision in execution. Instead of developing the brick characteristics in their designs, they bring in characteristics of an entirely different material and endeavor to force their brickwork to carry these. When failure results, it is because these foreign characteristics are the prominent and unsatisfactory features of the design. A glance through the cornice designs published in the last number, and the mantels published in this number, will reveal this shortcoming. The jury, in deciding the competition, has awarded rank to designers who, while possibly not so successful in matters of proportion, distribution of ornament, and general points of design as some of their competitors, have shown a clear understanding of the qualities of the material to be used in the execution of their designs, and not furnished a nondescript thing, adapted to wood, stone, putty, or whatever material can be made to take and hold a certain form. Many of the ornamental bricks used have apparently attracted the designers by their refinement and fidelity to their historic models. These same details designers have seen worked out in stone in the most beautiful buildings of the Renaissance period, and admiring the details and the designs have, in adapting them to the problems given, overlooked the fact that the difference in materials interposed wholly different conditions of design. In fact, some of the designs could be worked out much more easily in stone than in brick. The finest examples of brick architecture in the world do not show unsuccessful attempts to produce the delicate and refined details of carved stone, or the accurate workmanship of carefully dressed and laid stonework. They have beauty of an opposite sort, when not dependent upon the precision with which minute motives are executed. Their detail is not coarse, but it is not "finicky." It is all that can be desired in proportion and distribution of parts, but the fact that it is brick detail is never lost sight of.

A writer in "Stone," who is in a position to know, says that the granite cutters lost in wages and assessments during the recent long strike enough to buy and operate the leading quarries in New England. He estimates the loss to the strikers at $2,800,000, and his estimate is probably nearly correct. This shows pretty clearly where the strike hits hardest. The quarries are still there. The owners may have lost a portion of this year's profits, but they have lived comfortably, and the strikers have not.

TO CONTRACTORS AND BUILDERS.

To those builders to whom this number of THE BRICKBUILDER shall come as a sample copy we request their kind consideration of its merits as a business help.

There are a number of very meritorious periodicals devoted to elevations and details of frame buildings, but there seems to be a demand for a periodical furnishing details of the brickwork that makes a part of almost every building.

Such a periodical THE BRICKBUILDER aims to be.

For instance, this number contains a fine selection of brick fireplaces, wholly new and original, with details so complete that a master mason can build any one of them directly from the plates of the paper. The number following will contain several original designs of chimney-tops, also arched windows. The April number contains designs of two-story store fronts. The May number was largely devoted to the elevations and details of a brick church, designed expressly for our paper by Mr. J. A. Van Straaten, Jr., of Boston, and which has received high praise for excellence from some of the leading architects of the country. The July number contained forty-five original designs of brick cornices.

In addition to these extremely practical features we have been favored by many of the prominent architects of the country with elevations and details of brick buildings, designed by them, which have never before been published, and we have the promise from a large number of others that when they have any distinctively brickwork ready for publication, it will be contributed to our plate department.

During the year we shall insert twelve supplements, being photographic reproductions of famous brick buildings, mostly of foreign countries.

We hope you will be favorably impressed with THE BRICKBUILDER, and we respectfully solicit your subscription. The price is $2.50 a year. Your local checks will be accepted at par.

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THE BRICKBUILDER PUBLISHING CO.

TERRA-COTTA AS A BUILDING MATERIAL IN ENGLAND AND OTHER COUNTRIES.

"And the bricks are alive to this day to testify it."
Henry VI., Part II.

The use of terra-cotta in building is not a new custom, but a revival in England, and the merit of reviving it is to be attributed to Josiah Wedgwood, who founded large works in Staffordshire in 1770. But of late years it has been used in steadily increasing quantities, its rich colour being very grateful to the eye in our murky atmosphere, while it is peculiarly adapted for resisting the effects of the English climate. The term "terra-cotta" "has now come to be applied," says Mr. James Doulton, "exclusively to that class of ware used in the construction of buildings which is more or less ornamental and of a higher class than ordinary bricks, demanding more care in the choice and manipulation of the clay, and much harder firing, being, consequently, more durable and better fitted for moulded and modelled work." This is a modern definition, but in the broader sense of burnt clay, terra-cotta plays a great part in our knowledge of prehistoric man, being one of the most indestructible things on earth, surviving when marble and granite have mouldered or crumbled away. Bricks and jars and figures of clay are sometimes all that is left to tell the tale of some forgotten people. The Assyrians and Egyptians used burnt bricks and tiles as well as sun-dried bricks, and the former have resisted the attacks of time far better than the latter, as they differ from them in having undergone a chemical change in burning. If Egyptian sun-dried bricks, which have been exposed to the rays of an almost vertical sun for three thousand years, are put in a kiln to be burned, they become damp and plastic before turning into hard bricks, and radically changing their character. The Greeks built chiefly with stone, but the exquisite figures from Tanagra, etc., and innumerable vases, the finest belonging to the third or fourth century, B. C., testify to their skill in the manipulation of clay. The Romans used clay very extensively for all sorts of decorative work, sometimes working it with a chisel instead of using a mould. They carried their skill in pottery with them over Europe. Roman pottery is constantly met with in England; and at Castor, in Northamptonshire, a kiln and potter's tools were discovered and also a moulded arch and hypocaust bricks. The golden age of terra-cotta manufacture was the fifteenth and sixteenth centuries, when it was carried on to a great perfection in North Germany, the Low Countries, parts of Spain, and most especially in Lombardy; the Certosa, and the churches of Santa Eufemia, San Francesco, etc., at Pavia, the cathedrals of Crema and Monza are well-known examples. The exquisite enamelled terra-cottas of the Della Robbia family belong to the fifteenth century.

After the departure of the Romans there are few evidences of bricks being used in England before the fifteenth century, except in cases such as St. Alban's Abbey, where the bricks used were taken from Roman ruins. From about 1450 until after the reign of Elizabeth, terra-cotta was only used in large and expensive buildings, but the introduction of the Tudor style gave a great impetus to the use of moulded bricks. The ornamental work of the manor house at East Barsham and the parsonage house at Great Snoring, both in Norfolk, are excellent examples of terra-cotta work in the reign of Henry VIII. There are four circular terra-cotta panels at Hatfield Peveril, Hants, which were designed by Holbein and originally decorated the gateway of York Palace, Whitehall. The use of terra-cotta seemed to die out again in England after Queen Anne's reign. Little Wenham Hall, Suffolk (1260); Oxburgh Hall, Norfolk (Edward IV.); Eton College (Henry VI.); Hampton Court Palace (Henry VII.); Holland House (1607), are good examples of what still remains of English terra-cotta work before the modern revival.

About 1790 there was a slight temporary revival of the use of terra-cotta in building. A manufactory was started in Lambeth, which supplied the frieze of the Italian Opera House in the Haymarket, and the caryatides and other ornamental work on St. Pancras Church.

The following are some of the qualities of terra-cotta which are instrumental in its increasing popularity: —

1. Its indestructibility and freedom from decay by the action of the weather; the acid gases in the air have no effect upon it; the deposited dirt and dust wash off with the first shower, and the work comes out as pure and distinct as at first. Mr. Doulton has pointed out the freshness of the terra-cotta at Buckingham Palace in contradistinction to the decayed stone. The florid ornaments and skyline of Dulwich College are as fresh as when first put up. It may be noticed that the terra-cotta capitals of the columns of All Souls' Church, Langham Place (supplied in 1822 by Messrs. Coade), are still fresh, while the Bath stone is very much decayed.

2. The possibility of multiplying any form from which a mould can be made.

3. It is cheaper than the better sorts of building stone, and is so easily moulded that for intricate work or elaborate carving the difference in cost becomes very considerable. The more elaborate the design the greater the economical advantage of terra-cotta.

4. It is possible to enhance the effect of a design very greatly by using terra-cotta blocks varied in tint.

5. Fine effects of light and shade can be obtained by what in masonry would be undercut, but in terra-cotta is the application of separately modelled pieces of the material superimposed on the recessed parts, while all are still in a plastic state, these being burnt as a whole into a homogeneous mass.

6. Its strength compares favorably with other building materials, its resistance to compression, when solid, being one third greater than that of Portland stone. It can be used for flooring, being harder than York stone, and resisting friction well.

7. Resistance to the action of fire. Heat which would destroy stone has merely the effect of burning off the dirt from the terra-cotta, giving it the appearance of having just left the kiln.

8. Its weight is convenient; the pieces are never large, and generally hollow, and can be moved about easily on scaffolding. It weighs 121 lbs. per cubic foot when solid; but average blocks when hollow inside, with a thickness of two inches, weigh only about 68 lbs. per cubic foot.

9. The surface can be enamelled or glazed to heighten the colour where desirable.

10. It claims artistic consideration, because any delicacy that an artist can express in ordinary modelling clay is preserved in the burning, at least as durable as if copied in marble or bronze, and more accurately than is possible by the copyist; and, moreover, it gives the artist the chance of seeing the more ornamental portions of his design in full size, as the material actually built in is the same as that modelled. Of course, to balance these many advantages, there are drawbacks in the use of terra-cotta, chiefly in the difficulties of burning, and obtaining exactness of fit in continuous features; but these difficulties can be minimized by proper care and experience.

In designing a building in terra-cotta, the architect should beware of imitating stone, and adopt a different style of treatment. Bold, overhanging projections must disappear, and large forms must give way to a more bas-relief style of treatment in which colour and rich detail should compensate for the absence of broad masses and strong effects of light and shade. An examination of the brick architecture of North Italy, etc., shows that a style was adopted suitable to the material which was at hand. In Manchester the Royal Eye Hospital, Platt Church, and St. Bede's College are good examples of terra-cotta buildings. Few passers-by can have failed to appreciate the contrast of the grateful colour of the Eye Hospital to the duskiness and grime in Oxford Street.

The combination of clays used in the manufacture of terra-cotta depends, of course, on the colour and quality desired, for "clay and clay differ in dignity"; there are red, brown, buff, and white to choose from, and old stoneware ground to powder, feldspar, ground glass, etc., are used in combination with clays for special effects. Occasionally a single clay is used; for instance, Messrs. Gibbs & Canning make an excellent buff terra-cotta from pure fireclay. When the combination of the mass is decided upon, it is thoroughly kneaded or "pugged" with the necessary amount of water, to make a perfectly ductile, homogeneous, modelling clay, free from the smallest air cavities. The next process is the modelling or moulding. Sculpture, or elaborate ornamental details are modelled and at once passed through the kiln, but any repetition work — string-courses, mullions, cornices, balusters, etc. — must be moulded in plaster moulds. The makers of the plaster moulds are very ingenious in fastening them together in such a fashion that they can be withdrawn, piece by piece, when the clay is hard. Some wonderfully complicated forms can be moulded in this way; for instance, an Ionic cap, which has much projecting detail. The clay forms are left for seven or eight days in the drying rooms, which are kept at a temperature of about 75 degrees, and at the end of that time the clay is hard and stiff, and requires pressure with the nail to produce

indentation, and is ready for the very critical operation of burning. It is sufficiently close and compact to be turned on a lathe before going into the oven. The heat in the kiln is low at first, but is gradually increased until, after eight or ten days, it reaches a temperature of 1,200 degrees Fahr. The darker the colour required, the harder the firing must be. It is said that "coal should not be used in firing light-coloured terra-cotta, as, although the usual products of combustion are separate from the ware, sulphurous fuel darkens and tarnishes the surface."

The kilns are generally circular, and the heat is carried to the top through flues in the walls; then the kiln being covered and the draught towards the bottom, the heat descends.

Glazed terra-cotta may be either transparent — covered, as it were, with a film of glass — or opaque, like an enamel. Transparent glaze is produced by throwing salt into a specially constructed furnace when the wares are at a high temperature, or by dipping the ware, after once burning, into a bath of oxide of lead and tin, and then burning it again. Opaque glaze is formed by dipping the ware before burning into a slip formed of superior clay, very finely worked, and brought to the colour required, the object being to give a superior appearance to that presented by the ordinary burnt material. The solutions for enamels of different colours are all of dull gray tint before burning, which brings out the rich reds, yellows, etc.

This enamelled terra-cotta resembles the Della Robbia ware of the fifteenth century. Thus modern science is laboriously rediscovering old secrets and imitating the arts of four centuries and forty centuries ago. Perhaps if our "gilded loam and painted clay" can be brought to Assyrian perfection, the Australian, American, and the New Zealander to come may read the history of London in the ruins of the Natural History Museum at Kensington, the Royal Opera House, Shaftesbury Avenue, the Constitutional Club, Northumberland Avenue, or in those of the Prudential Assurance Buildings, Holborn. LOCKE WORTHINGTON.

LONDON, 1892.

BRICKMAKING AND BRICKBUILDING IN NOVA SCOTIA.

The extensive forests in this country, causing comparative cheapness of wood as a building material, has tended much to retard the general use of bricks in the construction of buildings, public as well as private. Outside of the capital city, and a few of the larger towns, it is rare to find a brick dwelling; the few which may be seen are crude in appearance and entirely devoid of any ornamentation. The idea that a brick building can be made handsome in appearance, without the use of face or repress brick and stone trimmings, has yet to be developed.

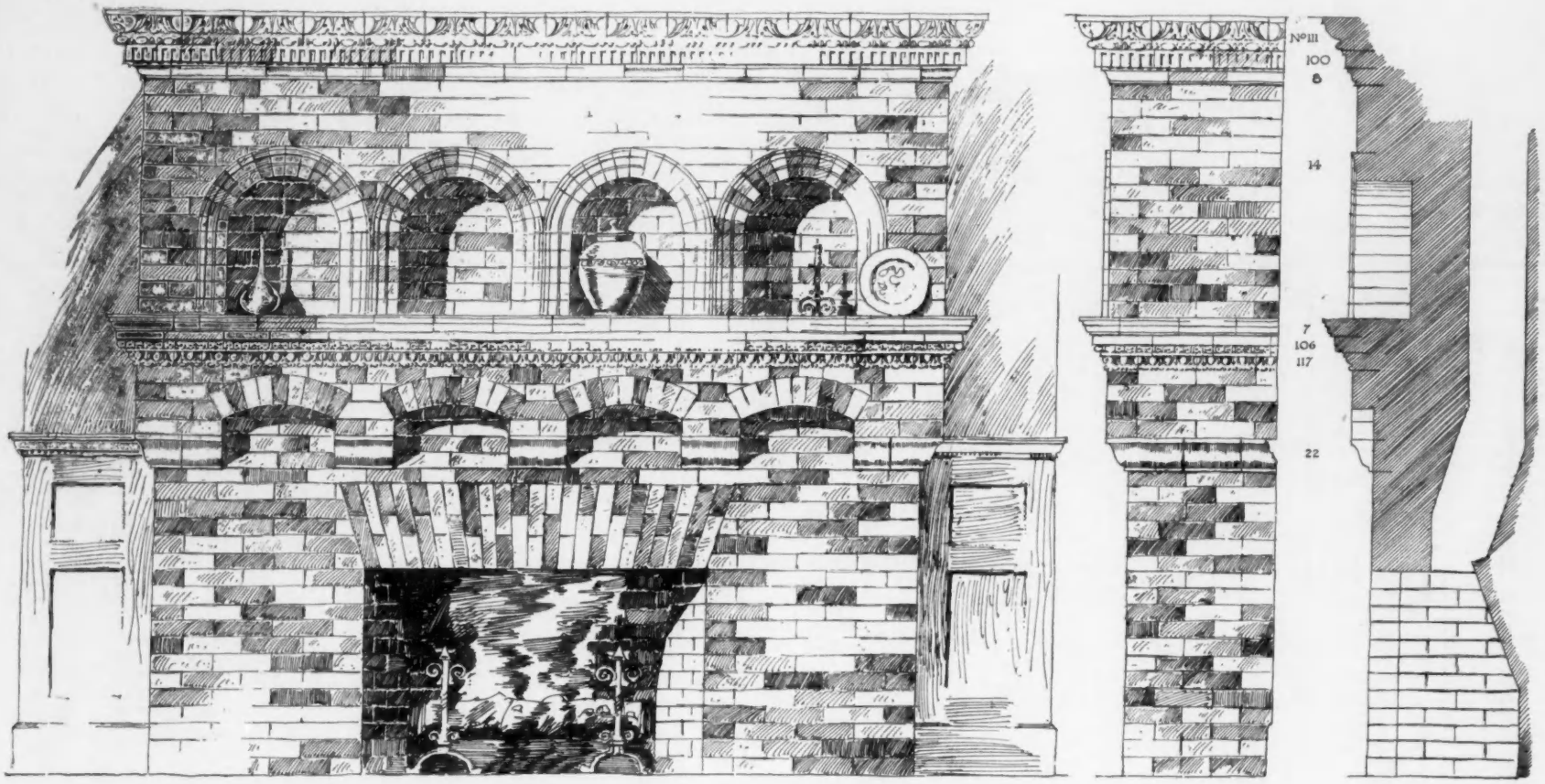
Face brick commands a high price, and stone trimmings are expensive and beyond the reach of the ordinary builder. A prejudice also exists against brick amongst many, on the ground that a dwelling constructed of this material is liable to be damp. This is owing to the hitherto defective mode of building, no air space being left in the outer walls. However, of late years, this factor is recognized, and almost any one now understands that a brick building can be rendered more comfortable for winter or summer use than one built of wood. Again, there are in the rural districts of the province very few skilled masons and no regular bricklayers. What we have are fairly good all round men; they will build a rubble foundation, lay a brick wall, or lathe and plaster in a plain, unpretending manner. It is quite easy, on the other hand, to find a carpenter skilful enough to build you a wooden house in the very latest approved modern style, and just as easy to obtain the manufactured lumber from the many saw mills, planing and moulding mills, and sash factories to be found in any ordinary sized town. The tourist from your country who, anxious to escape the siroccos of your heated cities, and lured by the many press notices this year of our country, to spend their vacation with us, have seen in our rural districts many dwellings which attest to the skill and æsthetic taste of the worker in wood and the excellence of the painter's art.

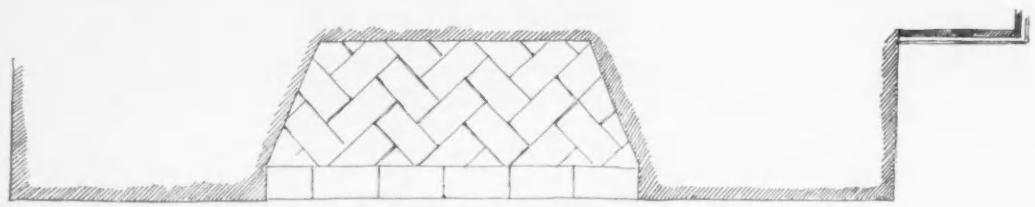
Brickmaking in this country is only in its infancy. You can count the brick-yards on your ten fingers, and yet the country is full of the material for making red brick of the finest description. With two or three exceptions, the operation of brickmaking is conducted by hand. The clay is mixed in an old-style pug mill turned by a horse, the bricks are struck by hand, laid on the ground to dry, — if it rains to be washed away, — hence the common brick are roughly made, as a rule, and utterly incapable of making a finished wall. The exceptions, where steam is the motive power and brick machines used to strike the brick, are in this Country, with one other yard I understand in Pictou County started this summer.

The brick made by the International Brick & Tile Company, whose works are situated here, are moulded automatically in one of Creager's machines driven by a forty horse-power engine. This company makes only common brick, but their brick have such smooth faces and square edges that they are being used for some purposes instead of face brick. The clay on the property of this company is of a superior quality, entirely free from grit, and is taken direct from the bank to the pug mill. When moulded, the brick are dumped on pallet boards and placed in racks to dry, this being the only yard in the province in which the brick are dried in this way. In all the yards the brick are burned in the old style of kiln. Wood is now used as fuel, and at present it is comparatively cheap, but the time will come when coal must take its place. There is not a "Eudaly," "Hoffman," or "Perfect" kiln in the country. Time and again I have urged the management of the company with which I have the honor to be connected to investigate the merits of the new and modern mode of burning, as compared with the old, and, in my view, expensive, wasteful, and antiquated methods, but without success. However, as everything comes to him who waits, I yet hope to see a modern kiln as part of our plant. No ornamental brick is made in the country, and as for terra-cotta it is unknown. Pressed brick is made in some of the yards, but they are manufactured by hand machines of antiquated construction. I should like much to see a Raymond or some other of the repress machines with which your manufacturers produce the beautifully moulded forms of brick and terra-cotta shown in the catalogues I have seen, and embellishing your fine and artistic brick edifices. Speed the day when ignorance and folly shall give place to the beautiful and edifying, as well as useful, in the construction of our residences and public buildings. Then may we hope to see brick predominating in our rural towns and settlements as the material of which to construct our dwellings, and such dwellings as shall combine art with utility, and which will not require constant repairs and the application of paint every now and then to keep up appearances.

To return, the Annapolis Valley, or "Evangeline's land," as it is now poetically known, contains vast deposits of argillaceous clay which becomes, when burnt, of different shades of red, from a bright toned terra-cotta to a deep cherry; just beside these deposits of clay are often found beds of sand sharp and fine, most of which can be used without screening. Moulding sand mixed with iron pyrites can also be obtained for experimenting in coloring, but usually with our clay it is not necessary. I have lately met with a description of kaolin which, if properly treated, can be made into buff brick or terra-cotta. It awaits only enterprise and capital to produce the manufactured article. We have the raw material, and the market will soon create itself. Our red clay, also, is most suitable for drain tiles; being free from grit or stone, it can be easily worked through the tile machine. The market for this class of goods in a few years will be practically unlimited, as underdraining is just coming in vogue.

Your suggestion in the June number of your valued journal is worthy of every consideration. I would that THE BRICKBUILDER could be placed in the hands of every builder, mason, and architect in the country. How it would stimulate the brick business, and what substantial dwellings of imperishable material would be erected! Now, what are the possibilities of the brick business in this country? Much every way. But first we require to manufacture ornamental and moulded brick, and also fine face or repress brick to combine with our common brick. In this valley alone, from Windsor to Annapolis, and along the line of the Windsor and Annapolis Railway, a distance of ninety miles, there are not less than fifteen growing towns. These towns are rapidly extending their borders. Situated in the midst of a rich agricultural and fruit district, — within a few miles of the South Mountain range, noted for its vast deposits of hematite and other iron ores, — they are becoming centres of business; and more, they are becoming the resort of the American tourist, whose wants must be attended to in the erection of summer hotels. Many of these towns are already provided with water works and electric light systems, while the telephone connects them with Halifax on the east, and Yarmouth on the west. The natural development of this valley without any phenomenal increase will furnish a market for double the present output, if brick, instead of perishable wood, were used for building purposes. The people would





PHILADELPHIA AND BOSTON FACE BRICK COS BRICKS.
PRICE IN RED $64.18
WIDTH OF BREAST 8'10½" OPENING 4'0"×2'5"

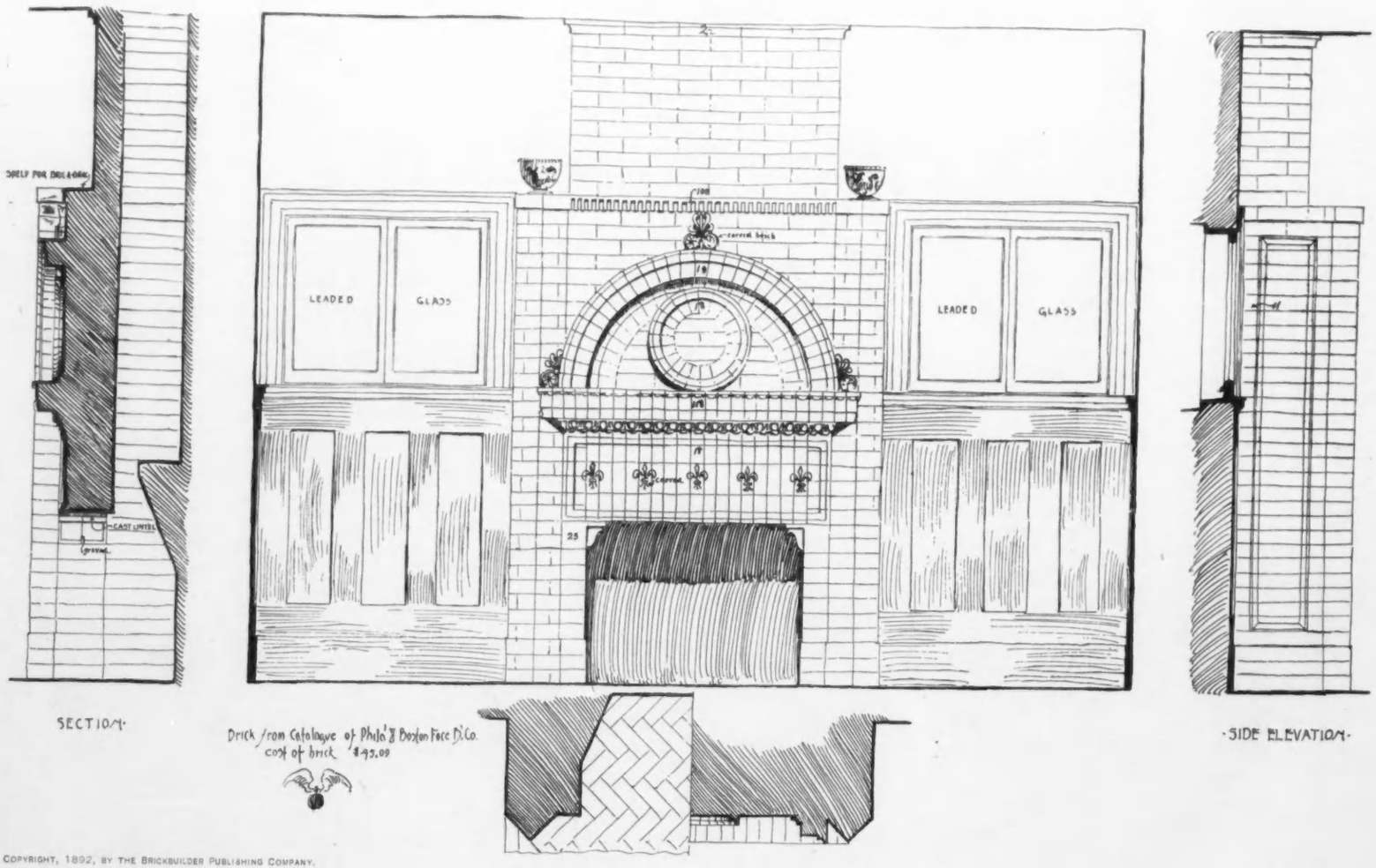
"We Log"

FIRST PRIZE.

J. T. MACLAREN, PHILADELPHIA.

BRICKBUILDER COMPETITION, No. 5.

DESIGN FOR A BRICK FIREPLACE.



SECOND PRIZE.

G. F. CRUMP, ALBANY, N. Y.

BRICKBUILDER COMPETITION, No. 5.

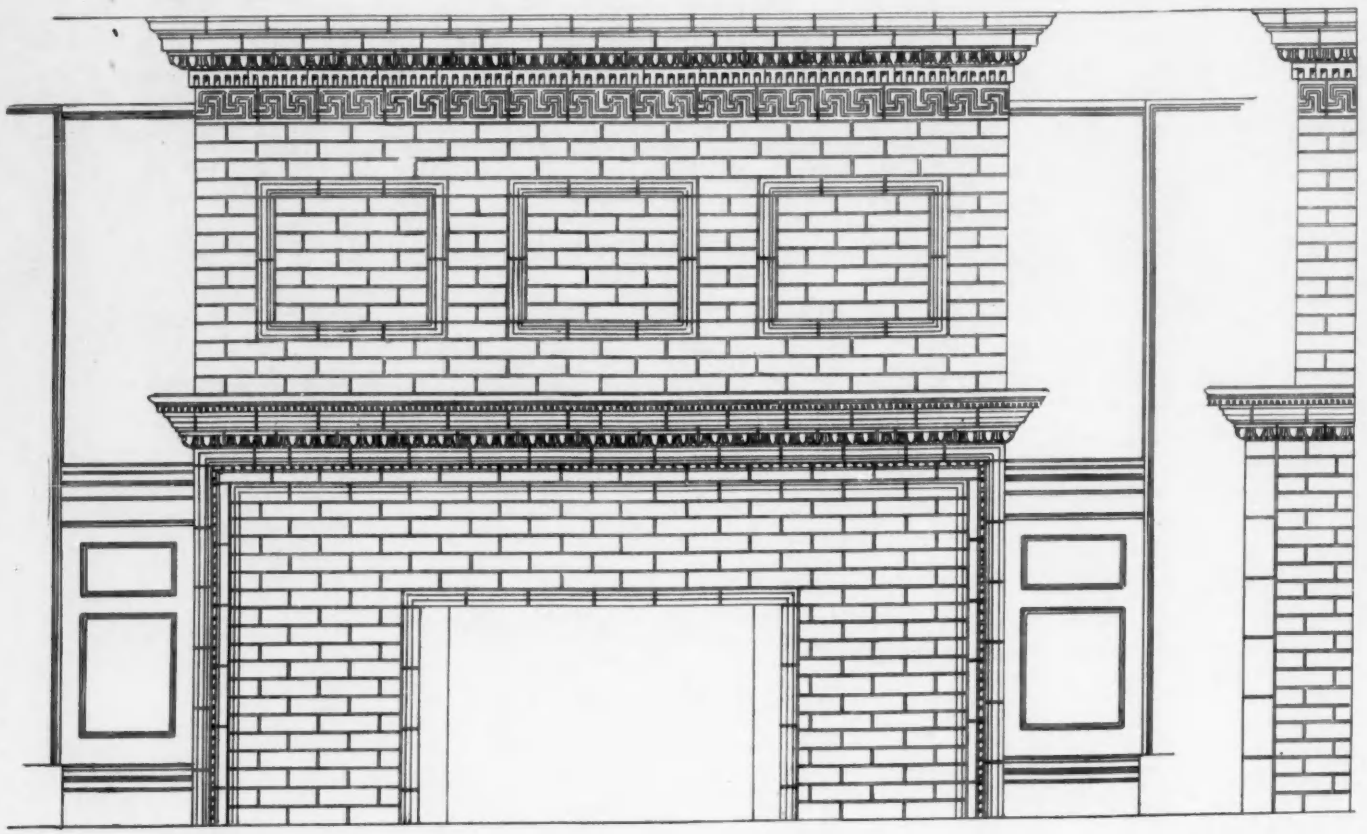
DESIGN FOR A BRICK FIREPLACE.

SUPPLEMENT TO THE BRICKBUILDER.

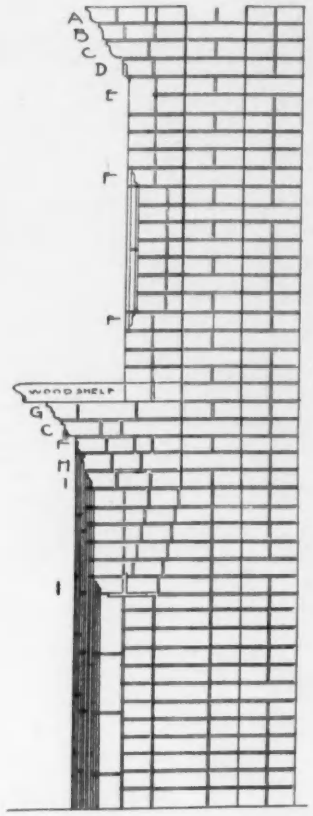
AUGUST, 1892.

VIEW OF SHIPLAKE COURT, ENGLAND, FOR R. W. C. HARRISON, ESQ.

ERNEST GEORGE AND PETO, ARCHITECTS, LONDON.

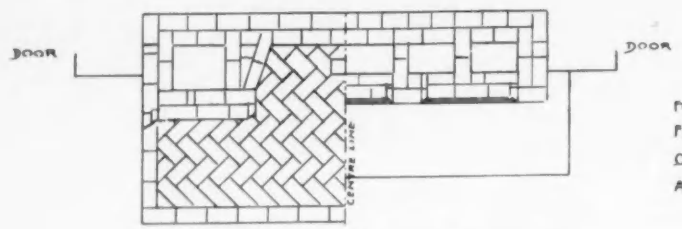


FRONT ELEVATION



SIDE ELEVATION

SECTION THRO CENTRE.



½" SCALE PLAN OF HEARTH ½" SCALE PLAN OF SHELF

FORTY FIVE DOLLARS WILL FURNISH ALL THE FACE AND ORNAMENTAL BRICK FOR THE ABOVE MANTEL AND HEARTH

ABBREVIATIONS

A	No. 8	PHILADELPHIA & BOSTON FACE BRICK COM.
B	No. 9	
C	No. 104	
D	No. 100	
E	No. 113	
F	No. 5	
G	No. 7	
H	No. 108	
I	No. 11	

SUBMITTED BY ALBANIAN

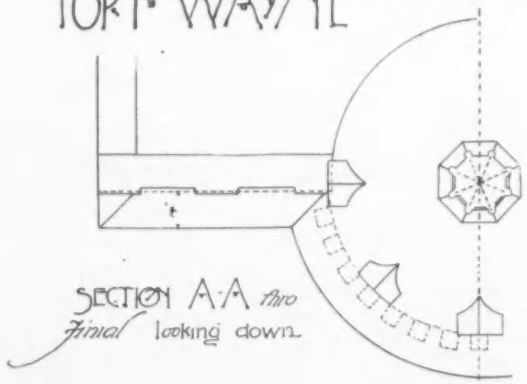
THIRD PRIZE.

JAMES C. GREEN, ST. LOUIS.

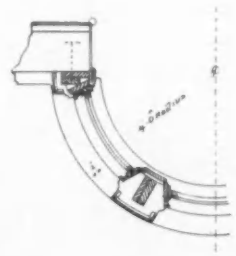
BRICKBUILDER COMPETITION, NO. 5.

DESIGN FOR A BRICK FIREPLACE.

DESIGN for STORE to be Erected on EAST Wayne Street
FORT WAYNE Indiana



SECTION A-A thro finial looking down

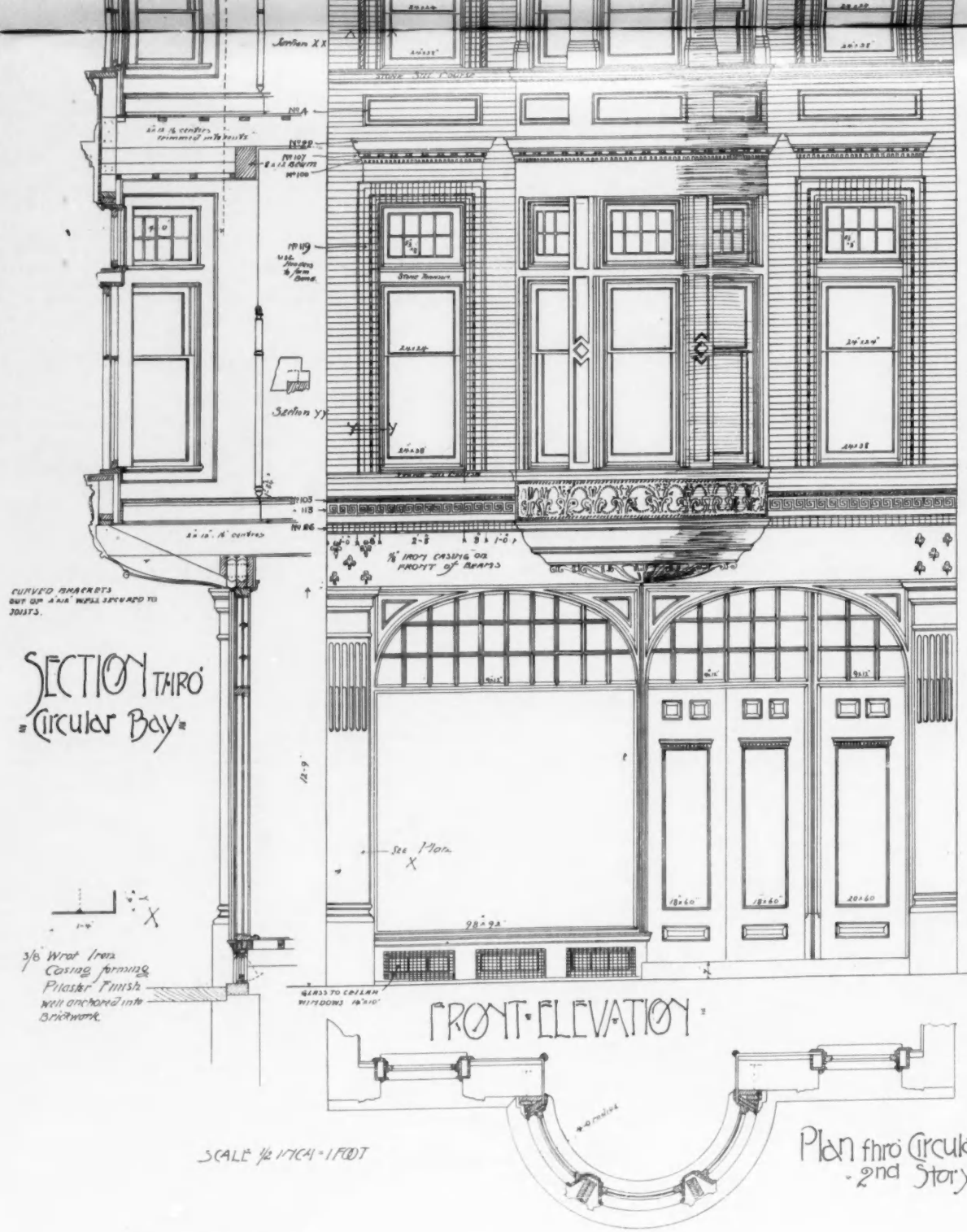


SECTION thro 3rd STORY of Circular Bay

NOTE Medallions and Shells taken from Ath Lewis Boston Terra Cotta CATALOGUE

FOUR MEDALLIONS will be REQUIRED each COUNTENANCE to be DIFFERENT of Manufacturers have them in Stock

NOTE All Molded and Face Brick with Exception of Medallions and Shells in Arches are taken from the Philadelphia and Boston face Brick Co's Catalogue



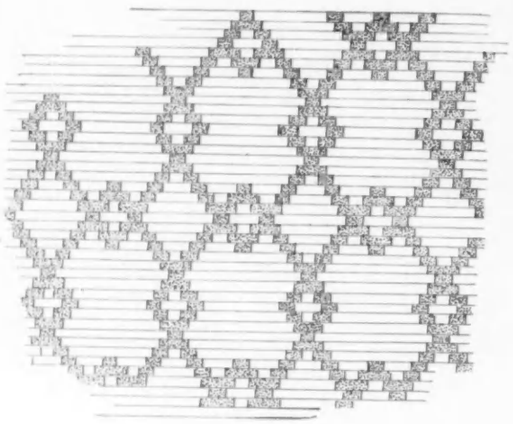
SECTION THRO
Circular Bay

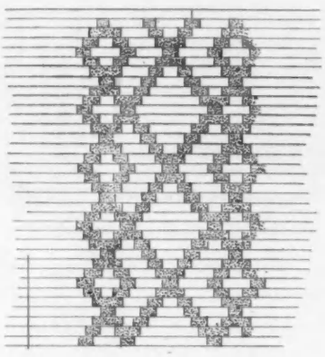
SECTION THRO
SIDE WINDOWS

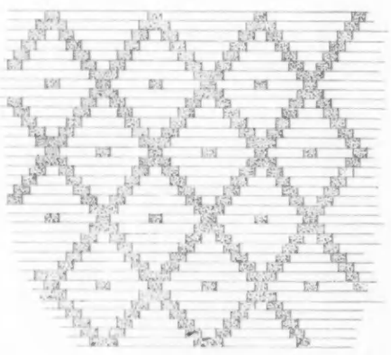
Wing and Mahurin
Architects
Fort Wayne
Ind.

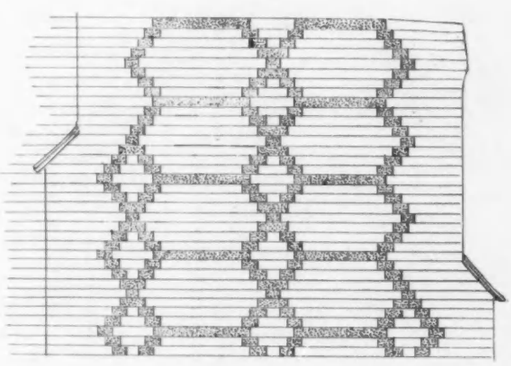
BUSINESS BUILDING AT FORT WAYNE, IND.

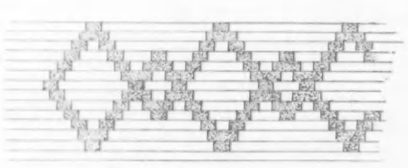
MESSRS. WING & MAHURIN, ARCHITECTS.

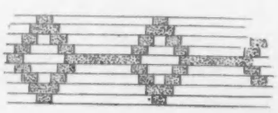








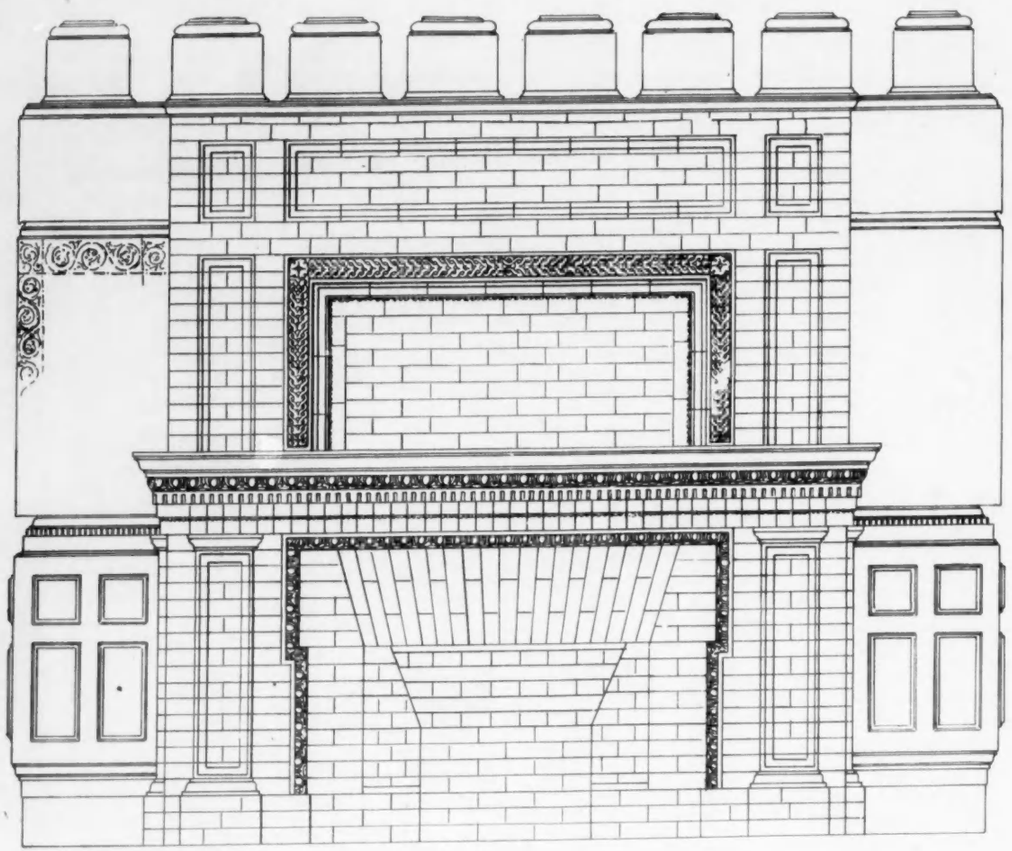


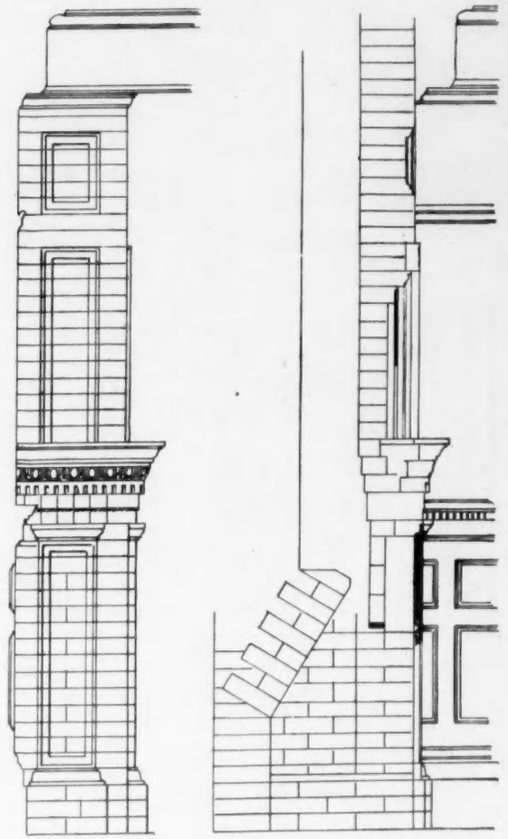


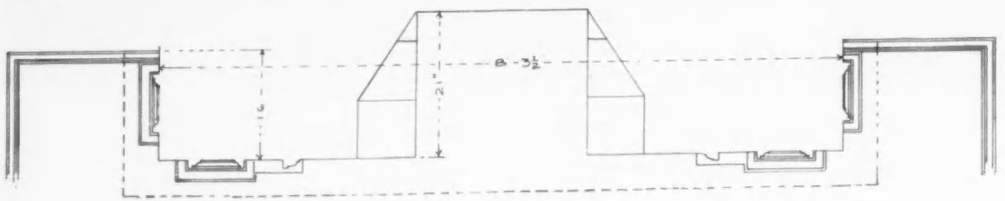
DIAPER WORK FROM SHIPLAKE COURT, ENGLAND.

MESSRS. ERNEST GEORGE & PETO, ARCHITECTS, LONDON.

See Supplement.







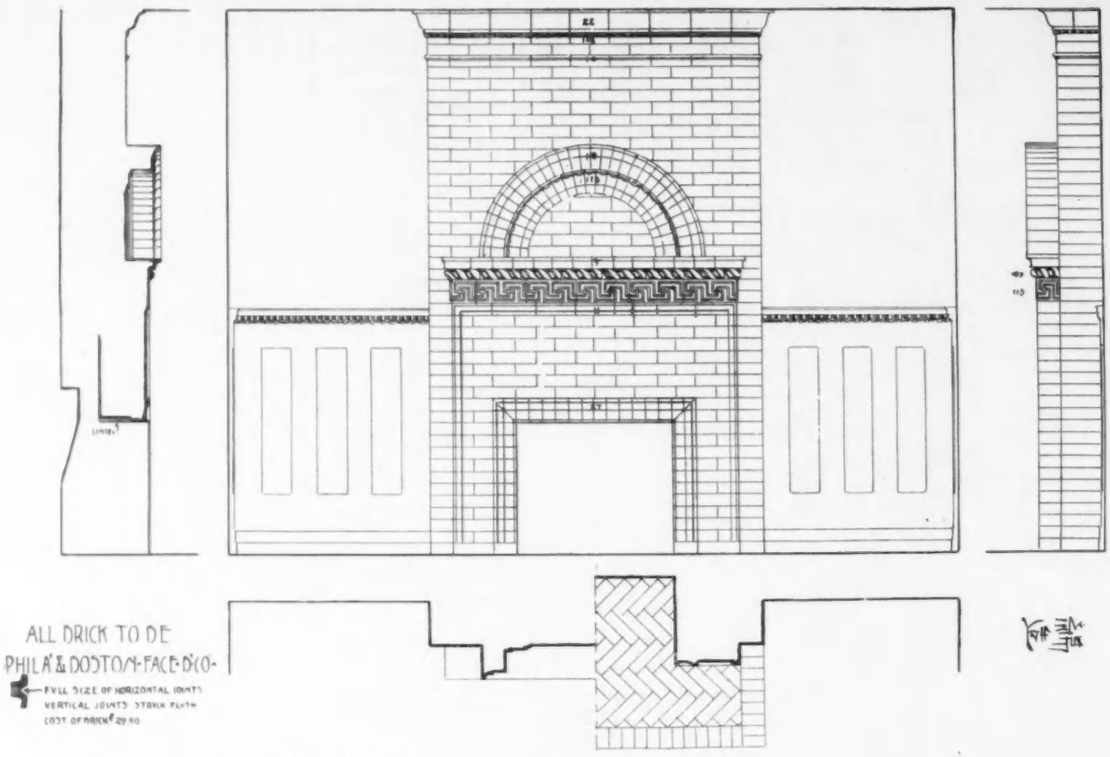
Bricks used Nos.
5-8-11-100-109-114-117-121
Cost of Face Brick $11.00.

FIFTH PRIZE.

ALBERT E. LAWYER, NEW YORK.

BRICKBUILDER COMPETITION, No. 5.

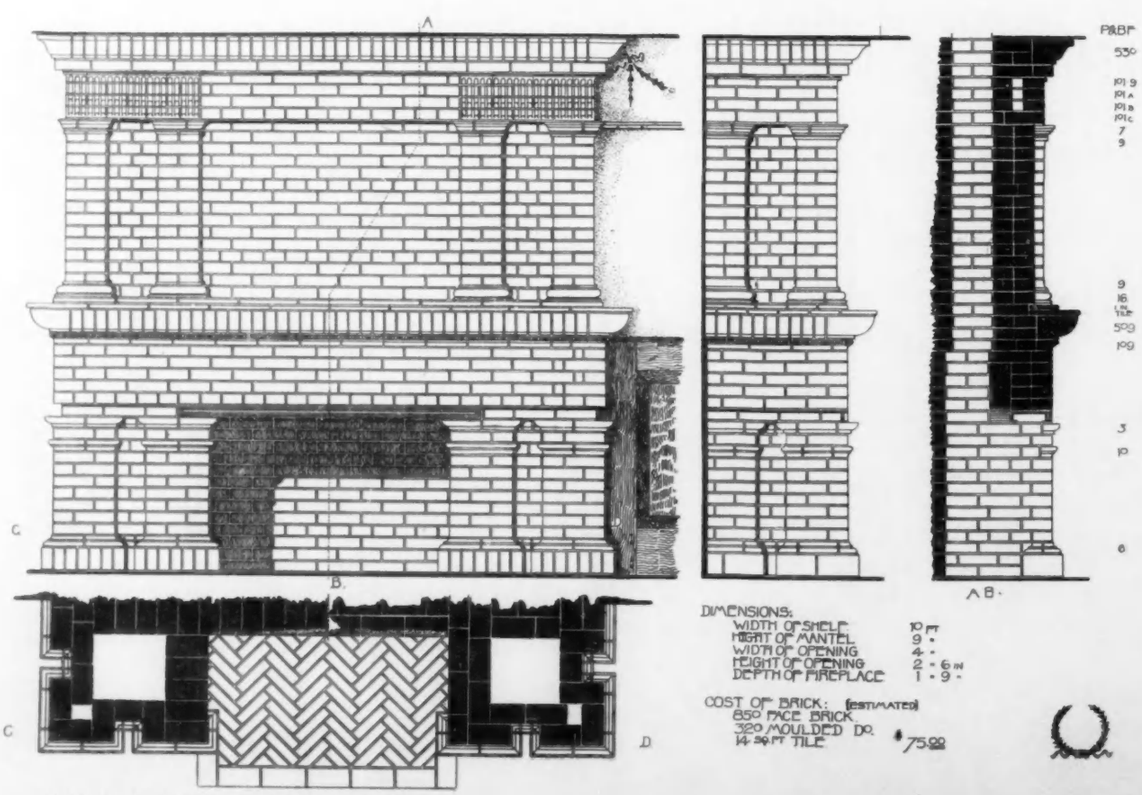
DESIGN FOR A BRICK FIREPLACE



FOURTH PRIZE. JAMES C. GREEN, ST. LOUIS.

BRICKBUILDER COMPETITION, No. 5.

DESIGN FOR A BRICK FIREPLACE.



H. G. FLETCHER, BOSTON, MASS.

prefer to build of brick than of lumber, if they could do so with the like results; that is, if they could build stylish buildings with but a slight increase in first cost. There is a large field here for the employment of capital and enterprise in the manufacture of repress and ornamental brick. Had we these goods we could sell more common brick; we could adopt your valuable suggestion in the June number of THE BRICKBUILDER and double our output in a few years.

JOHN ERVIN,
Secretary International Brick Company,
Bridgetown, Nova Scotia.

PREVENTION OF DAMP IN WALLS.

[The following, while applying directly to English construction, contains so much of interest to all American architects and builders that we have taken the liberty of republishing it from that exceedingly valuable South Kensington series, "Notes on Building Construction." Although this series is based upon English practice, the principles it lays down are broad and sound, and apply in general to building work the world over. It is published in four parts, each with an exhaustive index, adding to its value as a reference work. In this country copies can be obtained through any bookseller, or ordered direct from the importers, Bates, Kimball & Guild, of Boston, or the J. B. Lippincott Co., of Philadelphia. — *Ed.*]

The importance of keeping moisture out of walls as far as possible need hardly be dilated upon.

In addition to the great importance of a dry building for sanitary reasons, it is also most necessary for good construction. Dampness in the masonry soon communicates itself to the woodwork, and causes rot throughout the building, besides which, the masonry itself is not sound; the mortar, unless of good hydraulic lime or cement, does not set, and is always liable to the attacks of frost.

To give some idea of the quantity of water that the walls of an improperly protected building may contain, and of the evil effects caused by damp, the following remarks are quoted from an official report:[1]

"In England the common bricks absorb as much as a pint or pound of water. Supposing the external walls of an ordinary cottage to be one brick thick, and to consist of 12,000 bricks, they will be capable of holding 1,500 gallons, or 6 1-2 tons of water when saturated. To evaporate this amount of water would require nearly a ton of coal, well applied. The softer and more workable stones are of various degrees of absorbency, and are often more retentive of moisture than common brick. Professor Ansted states that the facility with which sandstone absorbs water is illustrated by the quantity it contains both in its ordinary state and when saturated. He states that even granite always contains a certain percentage of water, and in the dry state is rarely without a pint and a half in every cubic foot. Sandstone, however, even that deemed fit for building purposes, may contain half a gallon per cubic foot, and loose sand at least two gallons. When water presents itself in any part of such material, it readily diffuses itself by the power of capillary attraction, by which, it is observed on some walls in Paris, it ascends thirty-two feet from the foundations. Walls of such absorbent constructions are subject to rising wet by capillary attraction, as well as the driving wet of rain or storm. To guard against the driving wet on the coast, expensive external coverings, 'weather slates,' are used. But these do not stay the interior rising wet. This wet having to be evaporated lowers temperature. Damp walls or houses cause rheumatism, lower strength, and expose the system to other passing causes of disease."

It is a wise precaution to cover the whole surface of the ground under a dwelling with a layer of concrete or asphalt, in order to prevent the damp and bad air out of the ground from rising into the building.[2]

This precaution is, however, generally omitted because it involves expense; but measures to keep the walls dry are or should be adopted in nearly all buildings intended for occupation by human beings.

The walls of a building are liable to be charged with moisture:

1. By wet rising in them from the damp earth.
2. By rain falling upon the exterior of the walls.
3. By water from the roofs or leaking gutters soaking into the tops of the walls.

Of these evils the first may be prevented by the construction of dry areas or "air-drains," and by the introduction of damp-proof courses; the second may be counteracted by impervious outer coatings or by the use of hollow walls; and the third avoided by the use of projecting eaves with proper gutters, or where parapet walls are used, by an upper damp course.

Air-drains are narrow dry areas, nine inches or more in width, formed around such parts of the walls of a building as are below the ground.

They prevent the earth from resting against the walls and imparting to the masonry its moisture, which, rising by capillary attraction, might cause the evils already referred to.

The outer wall of the area should rise slightly above the surrounding ground, so as to prevent the water from the surface from entering the air-drain. Arrangements should be made for keeping the area clear of vermin, for ventilating it, and also for draining off any moisture that may accumulate at the bottom.

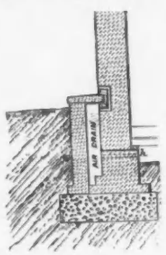


FIG. 1.

In the section, Fig. 1, is shown an air-drain twelve inches wide, having a rubble retaining wall, and being covered by flagstones built into the wall and weathered on the upper surface; of these, one here and there is removable in order to give access to the drain. The air-holes shown in the figure insure the thorough ventilation of the drain and of the space below the floor of the building.

There are several forms of air-drains; the width of the area is often much less than that shown in the figure, and sometimes is so reduced that the arrangement simply amounts to providing a hollow wall. In other examples the outer retaining wall is curved in plan, between the piers, being concave on the inside, by which additional strength is gained and thinner walls may be used. The area is frequently covered by a small quadrant arch turned against the wall, instead of by paving.

In some cases, to avoid the expense of air-drains, the outer surface of the portion of wall below ground is rendered with cement, asphalted, or covered with a layer of slates attached to the wall.

Substitutes for properly built air-drains may be cheaply formed by placing a flagstone in an inclined position against the outside of the wall to be protected.

Wide and open areas are much more expensive, but allow a freer circulation of air, exclude damp more thoroughly, and are, on the whole, superior to air-drains.

Horizontal Damp-proof Course. — Even where air-drains are provided, a damp-proof course should be inserted in all walls to prevent the moisture out of the soil from rising in the masonry.

The damp-proof course should be six inches or more above the level of the external ground, but under the wall plate carrying the floor-joists.

There are several forms in which a damp-proof course may be provided.

It may be of glazed pottery slabs built into the wall, as shown at D D in Fig. 2. The joints between the slabs must be left empty, or the damp will rise through them.[1]

A layer of tough asphalt, about ⅜ inch thick, is often used instead, as at A in Fig. 3.

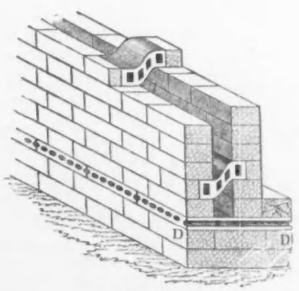


FIG. 2.

In buildings finished with a parapet wall, a damp-proof course should be inserted just above the flashing of the gutter, so as to prevent the wet which falls upon the top of the parapet from soaking down into the woodwork of the roof and into the walls below.

In some localities damp-proof courses are formed of asphalted felt, or with slates set in cement; these latter are rather liable to crack, and thin, impervious stones, or courses of Staffordshire bricks in cement, are better. Sheet lead has been used for the same purpose, and is most efficacious, but very expensive.

[1] Report on Dwellings in the Paris Exhibition, by Edwin Chadwick, Esq., C. B.
[2] This is enjoined by the Model By-Laws of the Local Government Board.

[1] To prevent wet which comes into the hollow space, through the outer portion of the wall, from finding its way along the top of the damp-proof course to the interior of the wall, a cement fillet may be run along the angle at the bottom of the hollow space between the top of the damp-proof course and the inner portion of the wall.

Arches over vaults, or cellars under footpaths, are frequently rendered all over the extrados with asphalt or cement to prevent the penetration of wet.

Vertical Damp-proof Course. — In addition to the precautions adopted to prevent damp out of the ground from rising in walls, it is necessary (especially when using inferior bricks or porous stones) to prevent moisture falling upon the outer face from penetrating to the interior of the wall.

The wet may be kept out of the interior of the wall by rendering the exterior surface with cement, covering it with slates fixed on battens, or with glazed tiles set in cement. Taylor's pottery facing bricks answer the same purpose.

Another plan patented by Mr. Taylor consists of overlapping slates placed vertically in the middle of the wall, the two portions of which are united by peculiar iron ties.

The Hygeian rock impervious wall-lining, patented by Mr. White of Abergavenny, consists of a vertical sheet of waterproof composition introduced into the thickness of the wall.

The wall is built up, two or three courses at a time, in two vertical slices, with about ½ inch opening between them, the inner parts of the horizontal joints next to this opening being left empty. The melted composition being run in, fills all the openings thus left, and not only prevents the penetration of moisture, but adds to the strength of the wall.

It is stated that a 9-inch wall built with the lining is stronger than an 18-inch wall built in the ordinary way.

This system may often be useful for parts of buildings in very damp places, but it must be remembered that walls perfectly impervious to air are, for sanitary reasons, undesirable for inhabited rooms.

Hollow Walls not only exclude the damp, but the layer of air they contain being a non-conductor of heat, tends to keep the building warm. Such walls are formed in two separate portions, standing vertically parallel to one another, and divided by a space of about 2 or 3 inches, sometimes 4½ inches.

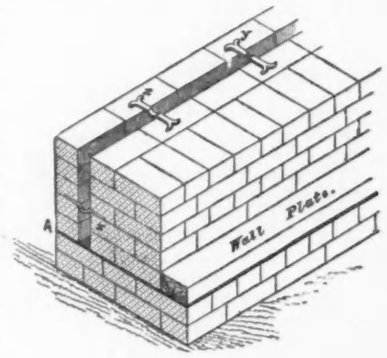


FIG. 3.

These two portions are generally united either by special bonding bricks, or by iron cramps. There are several ways of arranging the thickness of the portions of the wall and the consequent position of the air space.

In some cases the two portions are of equal thickness, the air space being in the centre.

Very frequently one of the portions is only 4½ inches thick, built in brick work in stretching bond; the other is of such thickness as may be necessary to give the whole stability.

In such a case the thin 4½ portion is sometimes placed on the outer, and sometimes on the inner side of the wall.

Hollow Walls with the thin portion inside. — In some cases, such for instance as when the wall has a stone face, the 4½-inch portion is necessarily on the inside, but this arrangement has many disadvantages.

In the first place, the bulk of the wall is still exposed to damp, and the moisture soaks in to within 7 or 8 inches of the interior of the building.

Again, if the wall has to carry a roof, expense is caused, as the span should be increased so as to bring the wall-plates on to the outer or substantial part of the wall, clear of the 4½-inch lining.

This may be avoided by bridging over the air space so as to make the wall solid at the top, which, however, renders it liable to damp in that part. There is an advantage in having the thick portion of the wall outside when deep reveals have to be formed for the door and window openings.

Hollow Walls with the thin portion outside. — If the 4½-inch portion is placed outside, the damp is at once intercepted by the air space, kept out of the greater portion of the wall, and at a considerable distance from the interior of the building.

The roof can be economically arranged so as to rest upon the interior thicker portion of the wall.

The stretching bond is, however, considered by some to be unsightly, unless made to appear like English or Flemish bond by using false headers; and, where the bricks are bad, the thin exterior portion, if liable to be attacked by frost, is in time destroyed.

Moreover, when the thin portion is outside, there is some difficulty in constructing deep reveals in a solid manner without their becoming a channel for damp across the opening.

Hollow Walls with Bonding Bricks. — Jenning's patent bonding bricks are made of vitrified pottery, and are of the shape shown in Fig. 2. These bricks are built in across the opening at horizontal intervals of about 2 feet 6 inches, and vertical intervals of about 9 inches to 12 inches. The bricks in the several courses are placed checker-wise, so that each is over the interval between two below.

The peculiar shape of the brick enables it to be built into the wall, so that the end in the front portion is a course lower than the end in the back portion of the wall. This prevents any moisture running along the surface of the bonding brick to the interior of the wall.

Precautions. — When building with these bricks it is advisable to cover them temporarily with a pipe swathed in hay bands, or by a narrow strip of wood, in order to prevent the falling mortar from lodging upon them. As the wall rises the strip is transferred in succession from each row of bonding bricks to cover the last built in.

Sizes. — The bent bonding bricks shown in Figs. 2 and 3 are made in four sizes, from 7½ inches to 13½ inches horizontal length between their ends.

Their length and shape are arranged so as to afford either a 3-inch or a 4½-inch cavity, and to enter the wall either 2¼ inches at both ends — 2¼ inches at one end and 4½ at the other — or 4½ inches at both ends.

The bonding bricks may extend right through the thin portion of the wall, or, if this is objectionable on account of appearance, their ends may be covered by bats, as shown in the figure.

Hollow Walls with Iron Ties and Cramps. — Ties of cast iron, dipped when hot in tar, are frequently used instead of bonding bricks, and have the advantage of not being liable to be broken if the wall should settle unequally. On the other hand, they are subject to decay by rust, and to expansion from the same cause, which may injure the wall.

The ties are about 8 inches long, ¾ inch wide by 1-10 inch thick; they are placed about 3 feet apart, horizontally, and with 9-inch vertical intervals between the rows.

Each tie is either bent or twisted in the middle so as to stop the passage of water along its surface, and hollow iron ties possessing great strength at struts have for some time been introduced.

Cast-iron cramps are made about ½ inch wide and 3-16 thick, and somewhat similar in form to the above.

The hollow wall is often arranged to begin on the damp-proof course, but it is better to continue the hollow for two or three courses lower, so that any wet falling into the cavity may be well below the damp course. A covering course of brickwork is placed on the top of the air space, which should have no communication with the outer air.

Some walls are built entirely of hollow bricks made for the purpose.

Stone walls are sometimes lined with 4½-inch brickwork on the inside, an air flue about 2 inches wide being left between the masonry and the brickwork.

Hollow Walls built with Common Bricks only. — In the absence of iron cramps or bonding bricks, hollow walls may be built with ordinary bricks placed on edge, after being dipped in boiling tar to make them as non-absorbent as possible. Every course is composed of alternate headers and stretchers, so arranged that each header comes immediately over the centre of a stretcher in the course below. The wall thus formed consists of two portions, each 3 inches thick, separated by a 3-inch space.

Another plan is to lay the bricks as in ordinary English bond, leaving a space of about 2½ inches between the stretchers in the front and back. This makes the wall (4½ plus 2½ plus 4½) = 11½ inches thick; and the headers are, therefore, too short to reach from face to back; the deficiency is made up by inserting bats at the ends of the headers.

These and other plans adopted for building hollow walls with ordinary bricks are defective in strength as compared with the walls

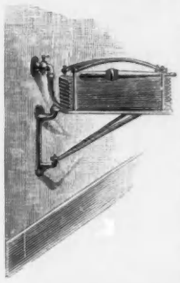
constructed with special bonds or cramps, and, moreover, the common bricks being porous, conduct moisture to the interior of the wall and defeat the object aimed at in making it hollow.

A better plan in the absence of the special bonding bricks or ties is to unite the portions of the wall by pieces of slate slab, or of dense impervious stone used in the same way as the iron ties.

Openings in Hollow Walls. — Where the lintels of doors and windows occur in a wall with a 4½-inch exterior portion, the following arrangement may be adopted to prevent the wet which may enter the air space from dropping upon the window or door frame:

Just above the window or door head a piece of sheet lead is built in on the inner side of the 4½-inch exterior wall. This lead may be 4¾ inches wide, 2 inches being built into the 4½-inch wall, 1¾ inch projecting into the air space, and the remaining inch turned up so as to form a sort of gutter, which should be carried about 2 inches farther than the ends of the lintel each way, so as to lead the water clear of the door or window frame.

FIRE PROTECTION FOR DWELLINGS.



In almost every large office or mercantile building one notices, placed in a prominent position on each floor, a swinging hose rack in which the hose carefully folded, with nozzle on top, lies ready for use at a moment's notice. In operation it is exceedingly simple. One has merely to grasp the nozzle and rush to where the fire is, and the rack, swinging around in the same direction, allows the hose to run off without any chance of tangling or kinking. Even in so thoroughly fireproof a building as the Ames Building in this city, the architects have added a standpipe with one of these hose racks on each floor, ready for any incipient blaze of woodwork or furniture. The manufacturer, Mr. J. C. N. Guibert, of New York, has recently begun the manufacture of a small rack of which we are able to give an illustration. For use in houses and small buildings, and wherever water under pressure is available, no property owner should hesitate to provide this inexpensive apparatus, this "ounce of prevention" one might say, it is so immediately effective in case of need.

BRICK BUILDING IN NORTH GERMANY.

The scarcity of stone in the northeast parts of Germany caused the partial or total adoption of brick for architectural purposes. Where brick was partially employed and stone was reserved for the decorative portions, as in parts of Poland and in Silesia, the style of the structures was not modified by the use of brick; but where it was entirely employed, as in the north of Brandenburg and in Pomerania, it produced considerable changes. The earliest specimens of brick buildings hitherto noticed in the North of Germany are of the twelfth century. Such are the cathedral of Ratzeburg, in the Duchy of Lauenburg, the cathedral of Lübeck, the conventual church of Jerichow near the Elbe, portions of the Marien Kirche at Bergen, Alten Kirche in the island of Rugen, the church at Gadebusch in Mecklenburg and the cathedral of Brandenburg. Examples of the thirteenth century are to be found at Cammin, in Pomerania, in the choir of the church of St. Ansgar at Bremen, the Dominican convents at Cracow and Breslau, part of the Rathhaus at Lübeck and the Kloster Kirche at Berlin. Towards the end of the thirteenth century several fine churches were erected, such as the Marien Kirche at Lübeck and St. Nicholas at Stralsund. The close of this century was the period in which the finest specimens of the brick buildings were executed, and the style was most fully developed. The brick buildings resemble the contemporary ones of stone in the North of Germany, in the great use of gables and their exaggerated size and decoration, the strange form of the towers, the immense roofs covering under one pich both nave and aisles, the slenderness of the piers and the poverty of effect in the interior; but they differ from them in the rarity of flying buttresses and the sparing use of buttresses of any kind, the general squareness of forms, the extreme plainness of the window tracery, in the absence of shafts, pinnacles, statues, large mouldings and bands of foliage, the constant repetitions of the smaller mouldings and ornaments, and the strong contrast produced by the mixture of glazed and unglazed bricks. The later buildings show the extension of these peculiarities, as the church of St. Mary at Wismar, the Jacobi Kirche at Stralsund, St. Nicholas at Wismar, and St. Katherine at Brandenburg. The civic buildings of the fourteenth and fifteenth centuries are very effective, such as the town halls of Lübeck, Stralsund, and Rostock. Some of the walls and gate-towers are remarkable, as the Muhlen Thor at Brandenburg, and the Holstein Thor and Burg Thor at Lübeck. Some of the private dwelling-houses of brick are very rich, and their great gables are much ornamented; good specimens may be found at Anclam, Wismar, Stralsund, and Greifswalde. The later period of Gothic architecture, from 1450 to 1550, is represented by fewer buildings, owing to the decline in prosperity of the Hanse towns, and the buildings then raised are inferior and poor in detail. Some of the civic buildings, however, are curiously ornamented, such as the Town Hall at Hanover, dated 1455, and the Rathhaus at Zerbst in Anhalt. Towards 1550 the influence of the Renaissance style began to be felt, and specimens of it may be seen in the Fürstenhof at Wismar, the Schloss at Schwerin and that at Gadebusch.

ENGLISH AND ITALIAN BRICKWORK.

Early English brickwork is now rare. Little Wenham Hall, Suffolk, of the latter part of the 13th century, shows different sizes of bricks; these are mixed with stone and flint in parts. The bricks are of Flemish shape, though some resemble Roman bricks or tiles, and the color varies. We must turn to the Eastern Counties for examples of English brickwork. In many of these flint is introduced in the form of panels, and this kind of walling is known as "flush work." Nearly every important church is of this mixture of brick or stone and flint. Layer Marney Hall, Essex, is a noted example of brickwork. The great gate-house of three stories, flanked by octagonal turrets, with battlements and parapets, and window mullions, exhibit an advanced stage of brickmaking and workmanship. Respecting the size of English bricks, those at Little Wenham Hall measure 9¾ inches in length by 4¾ inches wide, and 2¼ inches thick. Those made in Edward II.'s time measure 10 and 12 inches long by 5 and 6 inches wide. The "great brick," of 1734, measured 12 inches long, 6 inches wide, and 3 inches thick. Portions of Hampton Court Palace show some beautiful examples of English brickwork, to which the attention of the student may be directed.

The late Mr. Street, a great authority upon Italian brickwork, points out in his work on "Brick and Marble Architecture" to what a large extent red brick is used with stone. Italian bricks are rather larger than ours, but not of better quality; the joints are wide, generally not less than half an inch. The bricks used for windows, doorways, and other ornamental features are of finer quality and moulding.

Those who know Italian examples of brick arches and tracery are aware that the cusping of arches is of brick, set in the same radiating lines as the arch, and cut and rubbed to the outline required. He says, "In nearly all cases where brick is used for tracery, it is in the shape of plate tracery. The tympanum of the arch is filled in with a mass of brickwork, through which are pierced the arches over the several lights of the window, and these are supported on marble or stone shafts, with carved capitals instead of monials; and above these sometimes, as in the windows of St. Andrea, Mantua, are three cusped circles, sometimes only one; or else, as in the cathedral of Cremona, the plain brick tympanum is relieved by the introduction of a panel of terra-cotta bearing the cross on a shield, whilst round its outer circumference delicately treated though large cusping defines the outline of the arch." Outside the arch sometimes a red brick label 2½ inches wide is introduced. In Mantua and Asti these narrow bricks are set between rings of brick and stone voussoirs. — *The Building News.*

FOOTINGS FOR BRICK WALLS.

No part of a wall requires more careful construction than the foundation, for the obvious reason that the stability of the whole wall depends upon it. Foundations are too frequently neglected or are improperly constructed, and too often they are built in such a way as to be altogether too costly, considering the work they have to do.

The subject of foundations may conveniently be divided into two parts: first, the treatment of the soil upon which the wall is to rest; and, second, the method of constructing the base of the wall, or, as it is generally termed, the "footings." Although it is the second part

of the subject that it is intended to give consideration in this paper, a few words words may be said as to the first.

The best soil to build upon is probably a uniform and level bed of hard gravel, as it gives ample support, while affording natural draining qualities. Solid rock foundations are but rarely found, and, as a rule, means must be taken for the provision of an artificial foundation. Exactly the plan to be followed will, of course, depend upon the nature of the soil. When it is clay or fairly firm earth a bed of concrete will usually be sufficient. When the soil is very weak, such as is often found in the immediate vicinity of water, piling may be necessary, while a bed of sand upon a shifting soil may be successfully treated by driving in sheet piles close together around the site, thus forming a description of box which confines the loose soil.

Coming now to a consideration of the footings of a wall, the first thing to carefully bear in mind is the question of the pressure upon the soil. The wider the footings of a wall the greater is the distribution of the weight, and the smaller the pressure on any part of the soil. To make this clear, let us suppose that a single square foot of the base of a wall bears with a pressure on the ground of one ton. If the base of the wall is widened and is built so that two square feet bear upon the ground, it is clear that there is only a pressure of one half a ton on each square foot of soil instead of one ton as in the first case. Carrying this principle a little farther it will be seen that within reasonable limits the weight placed upon the soil may be reduced as low as one wishes by the simple means of increasing the width of the base of the wall.

But this naturally depends upon the footings of the wall being properly constructed. Footings are usually constructed by increasing the width of each course by half a brick, one quarter or about two inches on each side. Now it will be clear on a little consideration that, in order to equally distribute the weight over the whole surface of the ground upon which the bottom course of footings rests, it will be necessary to provide against the offsets tearing away, if such an expression may be used, from the body of the wall. In other words, the construction must be such that the weight of the main wall does not bear through and break away from the projecting footings and bear directly on the ground, independent of them. To make such provision, two things are necessary: first, to make the offsets amply strong enough; and, second, to tie the offsets into the body of the wall. The size of the offsets will depend upon the weight to be placed upon the wall, and although single offsets of a quarter of a brick in width are most frequently used, they are by no means adequate where very heavy weights are to be placed upon the wall. In such cases the offsets should not exceed one and a quarter inches and, when the weight is an exceptionally heavy one, should always be two or even three courses deep. In the construction of footings that are to support piers or columns, these two or three course offsets are especially desirable. The piers used in the construction of the New York elevated railroad are built in this way, and the great weight supported by the steel piers that are only little more than a foot square is distributed over quite a large area by the wide footings upon which they rest.

The second desideratum in building footings is a simple one, and yet it is not carried out in perhaps one case in a hundred. This is that every brick, where possible, should be laid a header, and that when a stretcher is necessary in consequence of the width of the wall it shall be placed as near the centre of the wall as possible. It is difficult to understand why bricklayers will persist in laying bricks in footings stretchers when headers answer so much better, and, to all intents and purposes, are as easily laid. Perhaps it is because they are so thoroughly demoralized, from a mechanical point of view, in laying them stretchers in the main walls that they cannot get out of it when constructing the footings.

ARTHUR SEYMOUR JENNINGS.

THE SUPPLEMENT.

With this number a jump is made in our series of supplements, from mediæval Italy to modern England. One reason lies first in the fact that we have recently received from Messrs. Ernest George & Peto, of London, scale drawings of some of their recent brickwork, together with excellent photographs of the completed work; and second, in the fact that our series of illustrated articles on "Old English Brickwork" is almost ready, and during the months that these will be published, the opportunity of using the supplement to add to their illustration cannot be lost. Therefore, while we intend returning to Italian work, we shall, for the present, devote the supplements to England.

The present one gives one view of Shiplake Court, the residence of W. H. C. Harrison, designed by Messrs. Ernest George & Peto; and in plate 62 we publish some of the architects' details for the diaper work which is used all over the exterior of this building. Later, a different view will be given, with other details to scale. Apropos of our editorial remarks on the brick walls, we wish to call attention to the wall shown in the supplement, as partly illustrative of our meaning.

In illustration of "Old English Brickwork" some very fine photographic supplements will be published that will greatly add to the value and interest of the articles.

THE BRICKBUILDER COMPETITIONS.

RULES: All drawings must be sent in marked with some motto or device, and accompanied by a sealed envelope marked with the same, containing the full address of the competitor. The designs are judged by a committee of well-known architects, solely upon their merits, the names of the designers remaining unknown until the award is made, when the sealed envelopes corresponding to the devices on the designs are opened. To protect the interests of our advertising patrons it is stipulated that no ornamental bricks not found in their catalogues shall be used. This is really no restriction, for practically all of the leading manufacturers will be found represented in The BRICKBUILDER. To encourage the study of effective use of the commoner materials, of two designs equally good, preference will be given that showing a skilful use of ordinary bricks to secure ornamental effect.

COMPETITION NO. 8.

A BRICK GABLE.

Programme. It is required to design a brick gable, twenty feet wide, with gutters four feet above the floor line of the attic room. The slope of the roof will be fifty degrees. A window or group of windows will light the attic room. Construction and ornamental work is to be entirely of brick, and the simpler forms are advised. In the selection of ornamental bricks competitors must observe the general conditions printed regularly at the head of this department. Drawings to a scale of ½ an inch to the foot, made in black ink, on smooth paper, must be delivered at the office of THE BRICKBUILDER, carriage paid, on or before Dec. 12, 1892. A well-rendered perspective sketch on a separate piece of paper may accompany the design, but it is not required. For the three best designs prizes of $5.00 each will be awarded; for the three second best designs prizes of $2.50 each will be awarded. The publishers reserve the right to publish any or all of the designs submitted, whether awarded prizes or not.

The publication of the designs in competitions No. 4 and 6 has been postponed, for the reason that No. 5 was much more successful, in point of number of designs, than either of the others, and as so many more competitors are interested, we have decided to let it take precedence and publish the chimney-tops and windows in the next issue.

COMPETITION NO. 5.

The regular announcement of prizes and awards will be made in the next number, when the other designs will be published. In this number the first, second, third, fourth, and two of the fifth prize designs are published.

THE ILLUSTRATIONS.

Plate 57. Design for Fireplace, first prize by J. T. Maclaren, Philadelphia.

Plate 58. Design for Fireplace, second prize by Gilbert F. Crump, Albany, N. Y.

Plate 59. Design for Fireplace, third prize by James C. Green, St. Louis.

Plates 60, 61. Store Building, Messrs. Wing & Mahurin, architects, Fort Wayne, Ind.

Plate 62. Diaper Patterns, Shiplake Court, Messrs. Ernest George & Peto, architects, London, England.

Plate 63. Design for Fireplace, fifth prize by Albert B. Lawyer, New York City.

Plate 64. Design for Fireplace, fourth prize by James C. Green, St. Louis.

Design for Fireplace, fifth prize by H. G. Fletcher, Somerville, Mass.